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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)
436-12

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

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Signature _____

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Application Number	Filed
10/735,989	December 15, 2003

First Named Inventor
Somenath Mitra et al.

Art Unit	Examiner
3742	Daniel Leon Robinson

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96)

☑ attorney or agent of record.
Registration number 40,618.

☐ attorney or agent acting under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34 _____

s/Timothy X. Gibson/
Signature

Timothy X. Gibson
Typed or printed name

732-634-7634
Telephone number

March 05, 2010
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required.
Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Somenath Mitra et al.

Application No.: 10/735,989

Filed: December 15, 2003

For: Micromachined Heaters For Microfluidic Devices

Confirmation No.: 4147

Group Art Unit: 3742

Examiner: Daniel Leon Robinson

Mail Stop: AF
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Sir:

In connection with the Notice of Appeal filed herewith, Applicants request pre-appeal brief review for the following reasons:

Claims 1-9 are pending and stand rejected.

Claim Rejection under 35 U.S.C. § 102(b)

On page 2 of the Final Office Action dated October 9, 2009 the Examiner rejected claims 1-2 and 5 under 35 U.S.C. § 102(b) as being anticipated by Lin et al. (U.S. Patent No. 5,591,139, "the '139 patent"). No reasons for the rejection were stated in the Final Office Action, but it is assumed the basis is the same as that stated in the March 30, 2009 rejection, discussed below. Applicants submit the '139 patent does not disclose or suggest each and every limitation of claim 1.

Claim 1 recites a microheater for microfluidic devices comprising at least one microchannel having a length formed on a substrate and further comprising at least one conductor disposed in said microchannel along a majority of the length of said microchannel. Claim 1 requires the presence or formation of a microheater or microheater device in a microchannel along a majority of a length of the microchannel.

The '139 patent neither discloses nor suggests a microchannel having disposed therein a microheater or microheater device that is disposed along a majority of a length of a microchannel. The only microheater in the '139 patent is formed from a plurality of individual resistors 60

perpendicular to the microchannel and is located only in microflow channel 78 at the interface region 11 of the microneedle 10 (*see* col. 3, lines 36-38 and FIG. 2A of the '139 patent). There is no microheater or means to achieve microheating located in the remaining majority portion of the microflow channel 78. In contrast, the presently claimed invention includes a microheater that extends through at least a majority of the microchannel. As a result, the '139 patent does not contain each and every limitation of claim 1.

On page 5 of the March 30, 2009 Office Action the Examiner pointed to the following portion of the '139 patent as the basis for rejection:

> Heating resistors 60 may be used to form a thermally-driven, cascaded-bubble micropump or simple heater. The microneedle may also include detector resistors 62 which extend along the bottom of the microchannel (see FIG. 1B) and are coupled to electrodes 84 (FIG. 3L-2) on the tip 86 of the needle. Microflow channel 78 is formed by removing sacrificial layers from underneath a shell 26 during processing. In order to access the sacrificial layer, etch access holes 74 are opened and then filled after etching. The fabrication procedures will be discussed below in relation to FIGS. 3A-1 through 3N-2.

This cited portion of the '139 patent does not teach or suggest at least one conductor disposed in the microchannel along a majority of the length of the microchannel as in claim 1. The heating resistors 60 and detector resistors 62 of the '139 patent are completely different and are not related to one another in any way. As further disclosed in the '139 patent, the "detector resistors 62 extend lengthwise along shaft 14 and function as wires to relay a signal from electrodes or recording sites 84 (FIG. 2A) to the shank end of the channel, where electronics 24 process the signals" (col. 5, lines 19-22 of the '139 patent). As disclosed, the detector resistors 62 that extend along the shaft 14 have absolutely nothing to do with, and are not capable of, heating. Clearly, the '139 patent does not disclose any resistor along shaft 14 that could be construed as heating resistors. As a result, the '139 patent does not contain each and every limitation of claim 1.

In light of the above discussion, applicants submit the '139 patent does not contain each and every limitation of claim 1. Claims 2 and 5 which depend from claim 1 and recite additional

features are also not anticipated and therefore allowable. Accordingly, the Applicants respectfully request the rejection be withdrawn and the claims allowed.

Claim Rejections under 35 U.S.C. § 103(a)

On page 3 of the Office Action the Examiner rejected claims 6-7 and 9 under 35 U.S.C. § 103(a) as being unpatentable over Lin et al. (U.S. Patent No. 5,591,139) in view of Ferguson (2003/0209534). Claim 1, from which claims 6, 7 and 9 depend, has been recited hereinabove. Applicants submit that neither the '139 patent nor Ferguson, alone or in combination, teach or suggest the present invention as claimed.

The shortcomings of the '139 patent have been set forth in detail above. The '139 patent relates to a micromachined needle having an interface region 11 and elongated shaft portion 14 and enclosed microchannel 78 disposed along the length of the interface region 11 and shaft portion 14. The enclosed microchannel 78 includes a microheater 60 only in the interface region 11 and specifically does not include any heating device in the shaft region. See, *e.g.*, FIG 1A. Nothing in Ferguson, which relates only to quartz and borosilicate substrates, even remotely suggests at least one conductor disposed in a microchannel along a majority of the length of a microchannel as in claim 1. Accordingly, Ferguson does not remedy the deficiency in the '139 patent. The combination of the teachings of the '139 patent and Ferguson result in a microheater disposed only in an interface region of a microneedle having a substrate comprising quartz and borosilicate glass. That combination is not the invention of claim 1, let alone dependent claims 6, 7 and/or 9.

Based on the foregoing, the Applicants submit claims 6, 7 and 9, which depend from claim 1 and recite additional features, are not obvious in view of the cited references. Accordingly, the Applicants respectfully request the rejection be withdrawn and the claims allowed.

On page 3 the Examiner rejected claim 3 under 35 U.S.C. § 103(a) as being unpatentable over Lin in view of Kenny (6,551,849). Claim 3 depends from claim 1 and recites further features, *i.e.*, the conductor comprises an aluminum alloy comprising 99% aluminum and silicon and copper. The shortcomings of the '139 patent with respect to claim 1 have been detailed hereinabove. Kenny cannot cure these shortcomings. Moreover, Kenny does not disclose the alloy of claim 3. Since the

'139 patent does not teach or suggest the invention of claim 1, and Kenny does not disclose the limitations of claim 3, the combination of references cannot result in the invention of claim 3. Accordingly, the Applicants respectfully request the rejection be withdrawn and claim 3 allowed .

On pages 3-4 the Examiner rejected claims 4 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Lin in view of Yamazaki et al. (6,165,876) and further in view of Ueno et al. (2002/00224662). Claims 4 and 8 depend from claim 1 and recite additional features. As set forth in detail hereinabove, the '139 patent does not disclose the invention of claim 1. The teachings of Yamazaki cannot cure the deficiencies of the '139 patent to achieve the invention of claims 4 and 8. The combination of the '139 patent and Yamazaki at best result in a microneedle device having an enclosed microchannel with a boron ion-implanted microheater only in the interface region and specifically does not include any heating device in the shaft region. This is not the invention of claims 4 and/or 8. Nor can the additional reference to Ueno cure the deficiencies of the '139 patent alone or in combination with Yamazaki. Accordingly, the Applicants respectfully request the rejection be withdrawn and the claims allowed.

A Notice of Appeal and petition for two-month extension of time and appropriate fees are submitted herewith. Applicants submit that all claims pending in the patent application are in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issuance are earnestly solicited.

Respectfully submitted,

Dated: March 5, 2010

s/Timothy X. Gibson/

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